

CHAMBERS'S JOURNAL

OF

POPULAR

LITERATURE, SCIENCE, AND ART.

Fourth Series

CONDUCTED BY WILLIAM AND ROBERT CHAMBERS.

No. 1017.—VOL XX.

SATURDAY, JUNE 23, 1883.

PRICE 1½*d.*

PHOSPHORESCENCE.

THERE is afloat among us much miscomprehension of what the term 'phosphorescence' properly implies. This is especially to be noted on board sea-going ships, where the expression, 'the phosphorus on the water,' is frequently heard in the mouths of otherwise well-educated people, as well as among the seamen. Now, phosphorus is what is termed a metalloid or non-metallic substance, one of the elements of chemistry, forming various compounds with other bodies, and having the property of being luminous under fixed conditions. Phosphorescence, on the other hand, is the property which some bodies possess of being luminous in the dark without the emission of sensible heat, and is observable in various bodies, liquid and solid, organic and inorganic. Phosphorescence has no necessary connection with phosphorus, neither does the term imply the presence of phosphorus. The luminous appearance on the sea is correctly described as 'phosphorescence'; yet that phenomenon is not due to phosphorus in any shape or form.

Another mistake into which people are liable to fall is in supposing that phosphorescence implies combustion. This it does in some cases, but by no means in all. It is generally asserted by those who have studied the subject, that phosphorescence may be induced in five different ways. We prefer to describe it here as arising in six varieties of manner, subdividing one of those usually set forth. Thus, the phenomenon may be the product of oxidation or combustion at a low temperature; or it may appear spontaneously; or it may be induced by heat; or be caused by mechanical action; or by electricity; or by exposure to sunlight—insolation, as it is called.

In the first place, then, phosphorescence may be the result of slow combustion in certain bodies. This is chiefly exemplified in phosphorus itself, which, when exposed to the air, combines with the oxygen contained in it. Phosphorous acid is thus formed, the process giving rise to the luminous

appearance of the substance in the dark. This oxidation is identical with what we term combustion. The decay or decomposition of animal and vegetable matter is slow combustion. Inflammable gases are set free, which combine with the oxygen of the air, and form a luminous halo about the decaying structures. This may frequently be observed on dead fish in warm weather. The Will-o'-the-wisp or Jack-a-Lantern of our marshes is due to the same cause.

Phosphorescence may arise spontaneously, as in the first case, so far as can be decided by ordinary tests, without being the result of combustion. Of this kind is the most wonderful illustration of the phenomenon—namely, the light on the sea. Frequently observable in almost every part of the ocean, this has excited the awe, admiration, and curiosity of simple and sage, poet and philosopher alike. One of the finest descriptions of its appearance may be found in *The Lord of the Isles*:

Awaked before the rushing prow,
The mimic fires of ocean glow,
Those lightnings of the wave;
Wild sparkles crest the broken tides,
And, flashing round, the vessel's sides
With elvish lustre lave,
While, far behind, their livid light
To the dark billows of the night
A gloomy splendour gave.
It seems as if old Ocean shakes
From his dark brow the lucid flakes
In envious pageantry,
To match the meteor-light that streaks
Grim Hecla's midnight sky.

Other bards besides Sir Walter Scott have described this appearance, but none more truthfully or beautifully. Physicists have experimented and speculated on its special causes; but the field of inquiry still remains open. More than one theory has been broached to account for marine phosphorescence; but none appears wholly sufficient or satisfactory. The most generally received opinion is that the light proceeds from animalcules. Various marine animals seem to possess phosphorescent power,

especially radiates, polyps, infusoria, and the like. Some assert that these creatures have special luminous organs, like the glow-worm and firefly. Others suppose that they secrete a kind of luminous mucus, which covers their bodies, and is even still phosphorescent when detached from them and dissolved in the water. This theory might be sufficient, were it uncontestedly proved; but, unfortunately, there yet remains some doubt, owing to the varying nature of the circumstances under which the phosphorescence becomes visible. Thus, while some observers have noted that animalcules taken from the sea and placed in a vessel of dark water have instantaneously caused the whole of that water to become phosphorescent, others have vainly endeavoured to detect any light given off from such animalcules as could be captured at a time when the water was vividly luminous.

Personal observations in the Atlantic, Pacific, and Indian Oceans, have led the writer to infer that not one but several distinct causes operate in producing the phosphorescence of the sea. There are times when electricity would seem to have some very active agency in inducing the light, the phosphorescence having been most marked when the air was heavily charged with that subtle fluid, and growing fainter as dispersion occurred. Again, sunlight seems occasionally to influence the phenomenon. In some latitudes, there exist patches of sea where phosphorescence seems to stream upwards from the depths, and these neighbourhoods are known to observant seamen, who imagine that there are 'beds of phosphorus under the water.' It may be that this effect is due to marine animals.

Granting that the organs of animals are the producers of the light, or that the mucus they secrete is so, we are still as far from our point as ever. What is the exact chemical or physical cause of this phosphorescence? That is what we require to know.

The hypothesis—for it is really no more than that—put forward to account for this phosphorescence in marine animals, argues that they are provided with special organs; that such organs secrete a mucus containing fat and other matters; that this, in decomposing, produces a species of combustion attended with the evolution of light. This theory, however, is open to some objections. Possibly, when the intimate correlation and interchangeability of the physical forces become more fully understood, the explanation of the sea's phosphorescence will be taken out of the realm of conjecture. The ocean is a vast laboratory, wherein much matter, both organic and inorganic, is constantly being digested, undergoing change in its elementary combinations. To effect such processes, various forms of physical force are at work. Motion, heat, and chemical affinity play their known parts, and the influence of the rest is more than suspected. The action and play of these through the water, and especially among the matters dissolved in it, may be the exact cause of marine phosphorescence.

Another very well-known kind of phosphorescence is that of the glow-worm and the firefly, which are provided with special organs

that secrete a liquid having luminous properties. The glow-worm—and probably also the fire-fly—seem able to light up their little lamp, or to extinguish it, by an act of will. But here, again, we have no more than conjecture to aid us in ascertaining the particular cause of the phosphorescence. Analysis of the secreted substance, and the how and why of its luminous property, controlled by the creature of which it is a living part, have yet to be finally determined.

In the vegetable world there are some instances of spontaneous phosphorescence. 'Poke-weed' emits a greenish lustre in the dark; and the juice of a Brazilian plant (*Cipo cananum*) is luminous for some hours after being drawn. Various aquatic plants, the *Rhizomorpha subterranea* and others, with sundry of the Fungus tribes, are more or less phosphorescent. Some flowers, the marigold and scarlet poppy among others, are said to emit phosphorescent flashes shortly after sundown.

Phosphorescence may be induced by heat. Many solids phosphoresce when heated between 550° and 750° Fahr. Of these may be mentioned the diamond, fluor-spar, oyster-shells, &c. The light is usually of a bluish or violet tinge. The well-known lime-light is an instance of the brilliant phosphorescent property of lime at a high temperature. Such bodies as are phosphorescent after exposure to sunlight, will have their degree of luminosity increased by the application of heat.

Phosphorescence may be induced by mechanical action. Certain bodies when submitted to friction, hammered smartly, or violently broken or torn, will phosphoresce. The light they emit may be given off in sudden flashes, or it may be continuous for a short time. Of this kind is the light given off from quartz, when it is pounded in the dark; as, similarly, from rock-salt, fluor-spar, sugar, and other materials. In both this variety of phosphorescence and the last, the cause would seem to be due to the interchangeability of physical forces. Thus, in the one case, heat becomes converted into light within the structure of the body operated upon; in the other, it is motion which changes into light.

Phosphorescence may be induced by electricity. Here we have another example of change from one force to another. This is peculiarly well illustrated, because the bodies that will phosphoresce during or after the action upon them of a current of electricity, are themselves non-conductors of electricity. On the other hand, phosphorescence cannot be induced by this cause in good electrical conductors, such as metals, for example. The explanation must appear obvious. In non-conductors, the electric current is wholly or partially checked; it cannot traverse their structures. The force, therefore, must expend itself by conversion, and thus light appears. Bodies that originally possessed the power of being rendered luminous by heat or insolation, and that have lost that power for some reason, may have their former sensibility restored to them by a discharge of electricity through them. A lump of sugar will be rendered brilliantly luminous by a discharge of electricity through it, and will continue to phosphoresce for a short

time after. Many other substances are affected in the same way.

Phosphorescence may be induced by insulation—that is, by exposure to sunlight. This is a very remarkable and interesting variety of the phenomenon. About the year 1604, an Italian artisan accidentally discovered the means of preparing sulphide of barium in a phosphorescent form, by heating heavy-spar with combustible substances. The discovery created a good deal of excitement during the course of the seventeenth century, so much so indeed, that a family named Logani, who possessed a monopoly of the secret, contrived to amass some wealth by the sale of what was known as 'Bologna Stone.' Similar to this are various substances, subsequently discovered, which are all rendered strongly phosphorescent after exposure to the sun's rays. Lately, an attempt has been made to render of some practical utility this property possessed by certain minerals. A few years ago, a Mr Balmain patented a pigment, with which is incorporated some prepared mineral having the property of becoming luminous after insulation, and remaining so for some hours. This Luminous Paint has been used for clock-faces, match-boxes, the lettering on the cover of a book, placards, pictures, and other matters that it seemed desirable to render visible in the dark. Probably the best use to which it has been put is that of being painted over diving-dresses, which are thus rendered phosphorescent, enabling the diver to distinguish objects at the bottom of the water.

Of the various inorganic substances known to possess this luminous property, the sulphides of calcium and of strontium—chemical combinations of sulphur with lime, and with the earth called strontia—do so in the most marked degree. When well prepared, the phosphorescence lasts for a number of hours after exposure to sunlight. The luminosity is usually of a violet tinge, and it may be excited by other light than that of the sun. Candle and gas flames induce it feebly, the electric light very vividly, it being richest in chemical rays. It has been found that the colours of the phosphorescence vary in the different sensitive substances, and that different rays also variously affect the tints. Experimenters have thus been enabled to prepare very beautiful and curious pictures.

ONE FALSE, BOTH FAIR; OR, A HARD KNOT.

CHAPTER XXV.—LORD PUTNEY.

'CLARE, my dear child, this once, indeed, I can take no denial. The season, remember, is drawing to a close, and Lady Minim's party furnishes an occasion not to be lost. If it were a mere question of pleasure,' continued Lady Barbara didactically, 'I should be the last to urge you to do what I know is, very properly, so un congenial to your feelings. As it is, your sense of the duty which you owe to the name you bear, and to the family, must prompt you to make the effort. Your presence in Society, and the warm welcome you are certain to receive, my dear, will be the best possible contradiction of the unpleasant rumours that are now becoming rife in London. And this, though every one worth

mentioning,' added Lady Barbara superbly, 'will be there, is still a serious, quiet sort of thing, to which you may perfectly well go.'

'I thought you told me, Aunt Barbara,' remonstrated the girl, 'when first Lady Minim's card arrived, that it was quite a grand party, at which Royalty would certainly be present. In any case, I had much rather stay away.' And she glanced at her black robe.

But Lady Barbara's mind was made up, and her resolute, not to say obstinate will overbore the weaker mood of her young charge. It was conceded, on the one hand, that the latter was to go to Lady Minim's party; but, on the other hand, that she should wear her black—a plain high dress, unrelieved by ornament.

'If I may go in my black gown, since you think it right, Aunt Barbara'—she had got into a custom of calling that dignified spinster 'Aunt' instead of 'Lady,' to the secret delight of that aristocratic icicle—'then I will go to this concert of Sir Frederick Minim's.'

For although it was called, officially, Lady Minim's party, it was really and truly Sir Frederick's. And it was most certainly a concert. Sir Frederick gave nothing but concerts, except oratorios; and Sir Frederick prided himself on being the one amateur of music in broad Britain of whom foreign *artistes* spoke as of a genuine patron, a real judge. They would have been strangely unappreciative, or singularly ungrateful, had they not recognised the merits of the harmonious baronet. The man was music-mad, if ever man was so. Young fellows of the Guards' Club averred that he played himself to sleep every night with a Stradivarius fiddle of undoubted pedigree. But it is a fact that he had music on the brain—that he was unflinching in his zeal—that he had taste as well as energy—and that his concerts, somehow, were the best in London. He was a rich baronet. His father had held high office, and had refused a peerage. The son was respected, and even liked, by those who thought him mad. A one-idea man is sometimes popular. Royal Highnesses made a point of attending the concerts which Sir Frederick and his bland wife gave, and yawned discreetly, if at all, at the dreary character of the programme.

The Minims lived in a great house on the eastern fringe of Kensington, a great house, which had been altered, at much expense, with a special view to music. They were a childless couple. Personally, they were extremely unlike. 'Doesn't know a note, Lady M. She couldn't tell the *King of the Cannibal Islands* from the Dead March in *Saul*; but still she's a capital wife for him, and smiles and smiles as if she understood all about it. I understand that his long-haired foreign fiddlers are quite afraid of her,' was a common remark on the part of irreverent youths.

Lady Minim was a large, handsome, silent woman, with the bust of a Juno. She had not had a penny; but then Sir Frederick had a considerable fortune. She was not conversational; not a good household manager; not brilliant in social intercourse; and yet her health and temper were beyond all praise; and her smiling stupidity made her very dear to her active husband,

and caused her to be liked and laughed at by her own sex. Sir Frederick himself was a little man, in a black wig, with beady eyes and beetling brows, strangely busy, and preternaturally nimble. 'Jumps like a frog, and scoures London, in his brougham, like a fashionable physician; but he's a good sort of man, too—very worthy old fellow, poor Sir Frederick Minim; ' such was the general verdict.

There are parties and parties. To be a guest at Sir Frederick's huge red-brick Kensington mansion was in itself a sort of distinction; much more so, for instance, than the more heterogeneous hospitalities of Mandeville House and Macbeth House, palatial abodes as these were. Had it not been for this, and for the steady friendship of Royal Highnesses, which always does throw a golden aureole around the favoured head, the wearied children of fashion, tired out by the labours of a London season, would not have cared to compete for the privilege of hearkening to scientific strains that died off, ever and anon, into quasi-silence; and then throbbed or wailed on, feebly, provokingly, some said, like the flickerings of an expiring candle, until they blazed up into one triumphant crash and shower of sonorous fireworks, as it were, and then sobbed themselves to sleep—had it not been for the fact that space was valuable, and invitations a favour. There is always something exciting in pushing at a shut door.

The deep, heavy roll of the carriages sounded like summer thunder among the Alps, in proximity to the red Kensington mansion of Sir Frederick Minim, on the evening of the last grand concert. Among the last to arrive were Lady Barbara Montgomery and her ward. The young mistress of Leominster House had adhered strictly to her original resolve, and wore a plain high mourning-dress, without a scrap of lace or the sparkle of a gem to set it off. There were Leominster family diamonds, and Lady Barbara had been anxious that she who now possessed these should wear this or that almost priceless heirloom; but nothing could induce the fair young owner to swerve from what she had said, when first persuaded to appear at this crowded assembly. 'A plain black gown, as usual, dear Aunt Barbara,' had said the youthful heiress of so much wealth and splendour; 'but nothing more.' Yet how beautiful she looked, as she made her entry into that great concert-room—it was more of a hall than a room; and how spontaneous was the murmur of unbidden admiration which followed her as she went. There was no lack of good looks in that distinguished company—quite the reverse. How could it be otherwise, in the great marriage market of the world. The two or three chief belles of the season were there, and many sweet competitors, who pressed on the heels of these first favourites; and those young married dames of high degree whose photographs and praises are bandied about from hand to hand and tongue to tongue, and who have received the nickname of professional beauties. But they, too, in all the array of their charms, flashing in jewels and fine clothes, seemed outshone for the moment by this modest, girlish young creature, whose lovely head was crowned by no adornment save her golden hair.

The warm welcome which Lady Barbara had

predicted for her young charge may not have been more than mere lip-service; but it was, at any rate, a very flattering one. Lady Minim came to bestow a handsome share of the sunshiny smiles that with her did duty for articulate speech, upon her youthful guest. She was, as has been mentioned, a silent, buxom woman, who rarely talked to her friends, but who beamed upon them with honest eyes and dimpled cheeks and very white tiny teeth. 'So very kind of you to come to us,' was what she said; but the timid guest felt grateful to her because of her comforting method of saying it. And Sir Frederick, all the cares of the concert on his shoulders, fresh from a conference with Signor Falderaltit, eager for an understanding with Herr Fiddlededee, found time to rush up for a moment and make his bow, and whisper a word or two to Lady Barbara his old friend, and then plunged off into the fray. The Duchess of Snowdon too, and sundry other very great ladies, made a point, for Lady Barbara's sake, of being publicly very civil to the young Lady Leominster, concerning whom, and her strange dispute with her sister, such odd tales were afloat. Little Ned Tattle, who had, by unheard-of intrigue and shameless solicitation, secured a card for the party, stood on tiptoe at the back of the crowd, and, as he noted the countenance which the cream of London society extended to the fair young lady, mentally determined that hers was the winning cause. And then there was a hush and a settling into places; and then, after a moment of agonised expectation on the part of Sir Frederick, as with quivering features he watched the baton of the leader of the orchestra, the concert began.

The concert itself it is perhaps needless, and even impossible, to describe, without resorting to the technical phrases of analysis, commendation, or blame, which form the stock-in-trade of the newspaper critics who are set in judgment over violins and vocalists. One concert, at least one of Sir Frederick's concerts, is very like another; but this one was pronounced, by enthusiastic long-haired aesthetes of the innermost ring, lily-wearers, sunflower worshippers, to have surpassed its predecessors, especially in the rendering of the chromatic chords. And young ladies whose own pianoforte-playing had been but dull drudgery for governess and pupil alike, and who did not know the difference between rendering chromatic chords and dancing on the tight-rope, swelled the chorus of applause and of encomium, and with pretty inanity, lisped out that dear old Sir Frederick's music was 'quite too—too,' just as they would have spoken of a winning racehorse at Ascot, or of a bank of azaleas at a flower-show.

Behind leafy shrub, or so far behind it that its stiff green leaves sheltered him from the observation of part of the audience, and leaning against the wall, stood Arthur Talbot. He had, himself unseen, noted his golden-haired friend's arrival, and the sensation which her beauty created; and he was scarcely able to withdraw his own eyes from that fair, innocent young face, on which a shade of sorrow seemed to rest, save when at times she spoke in answer to the remarks that were addressed to her during the pauses of the music. How like, how very much alike, not merely in features and in stature, but in expression, those

two sisters were! There was scarcely a turn of this young girl's head, scarcely a movement of her lips, that did not remind him of that other one whom he knew to be alone and sad in the dingy solitude of Bruton Street.

Presently there came an interval of rest for orchestra and singers—an *entr'acte*, as the French would have described it—and many of those present rose from their seats, and there was a general movement and a buzz of conversation. This stir brought Arthur face to face with his fair friend, who had till then been unaware of his presence. She held out her hand to Arthur with all the frankness of their old intimacy in far-off Egypt. 'I am so pleased to see you, Mr Talbot,' she said. 'I began to think that you had gone back to your home in the country, or had forgotten us—forgotten me.' It was a very sweet melancholy voice in which she spoke; and sweet too, and almost childlike, was the faint smile on those dainty lips. How different from her manner on the day when he had met with her in Regent Street, and when he had begun regretfully to think that she was being spoiled and hardened by prosperity and power. Even the tone of shy reproach in which she spoke had in it something flattering to that self-love from which so few of us could justly boast to be quite free.

Lady Barbara, too, chimed cordially in. Why had Mr Talbot forgotten his friends? He had become a stranger, indeed, at Leominster House; but if he liked to call, she would promise to forgive his truancy. Dear old Lady Barbara talked, when she wished to please, like a printed book—so her juniors declared, and this was her method of being gracious. Then Lady Barbara turned to exchange greetings with a contemporary of her own, and Arthur Talbot and the fair bearer of the Leominster title talked together for a little time. The young man felt strangely embarrassed. He hardly could resist the fascination of the lady's manner, and yet he remembered his pledge to her lonely sister, and loyally abstained from promising to visit her successful rival. He found this negative task the easier because Lady Barbara suddenly intervened, saying: 'Clare, love, a very old friend of ours'—it must have cost the stately spinster an effort not to say 'our House'—'asks to be introduced to you—Lord Putney, of whom you have so often heard me speak.'

Now, Lady Barbara had never, to the young lady's knowledge, made mention in her presence of Lord Putney's name; but it was easy to tell by the intonations of her voice that she thought very highly of the nobleman who had craved to be presented to her youthful charge, and who now made his bow with a deft suppleness and old-fashioned courtesy that would have done credit to a French *petit maître* of the pre-Revolutionary days. In person, Lord Putney was slight and spare—an old beau, of course, but amazingly alert, and astonishingly well preserved. There was quite a natural pink colour in his patrician countenance, a colour that owed nothing to art. His very white teeth, of which he was a little vain, were all his own too; and though he had the trick of peering into people's faces through a great gold-mounted eyeglass, it was only because such an affectation had been in vogue when the

Sailor King reigned over us. There was nothing artificial about Lord Putney except the tint of his somewhat thin hair, which was dyed to a beautiful shade of almost golden brown, and of the long whiskers that blended with his carefully trained moustache, and which were also dyed to the same bright yellowish brown. The wrinkles in his face, the lines and the pockers, the tell-tale marks, in fact, were not so perceptible with him as with some men so very much younger that they might have been his sons. But Lord Putney was a wonder in his way.

This mature nobleman's age—of course it is of Lord Putney that we speak—was patent and notable to all who chose to study any one of the gilt-edged volumes, bound in red or blue, which tell us the most salient facts concerning our hereditary legislators. But then ours is a time when young men quickly grow old, when to be bald at three-and-twenty is not remarkable, and when strong emotions and restless minds mar the fresh smoothness of a youthful face with a rapidity that would have astonished our tougher ancestors. It was very odd for a philosophic observer to bear Lord Putney's natal year in mind, and then, with that knowledge ever present in his memory, to observe how he moved—how he skipped—how neat and slender and upright was his figure—how keen his zest for the enjoyment of life. And yet, odder still, Lord Putney gloried in being of the old school—'old school, good school,' he would say, and kept a dreadful little gold box in his pocket, enamelled at the top, that box, and with a history of its own. Imperial Somebody had given it to diplomatic Somebody at the Congress of Vienna. And my lord would take it out, and tap it significantly, and flourish it and open it, and gracefully present the scented snuff within to large-limbed, languid young swells of this generation, who recoiled from tobacco in such a form as from a snake.

Perhaps the most remarkable thing about Lord Putney was, that although what is called a ladies' man, although, too, what is called a marrying man, and ample as were his means, he had never been married. He had never even made a proposal of marriage. Perhaps his taste was too fastidious. Bachelors are sometimes apt to set up too high a standard for their ideal wives. Lord Putney was confidentially reported to have lectured over his claret, after dinner, on feminine perfection, and the difficulty of finding it, with tears in his eyes. His eyes were bent on the sombrely-clothed lady of Leominster, now, with unmistakable admiration. It was not so much her beauty that attracted him as the utter, simple, childlike grace of her bearing. How much of beauty had he seen in his time! and of simplicity how little! Lord Putney asked leave to call. He had not been back long, he reminded Lady Barbara, in London. He had been lingering at his Como villa, and then away in his yacht, or he should have paid his respects at Leominster House ere this. He was so old a friend of the family! Of course Lady Barbara bade him, smilingly, welcome as a prospective visitor. So did Lady Barbara's companion, to whom he probably appeared in the light of a kind, sprightly, old gentleman. 'I shall come back presently, at the finish,' said Lord Putney as he bowed and withdrew; and chairs were resumed, and the fiddles

were tuned afresh. And then the second half of the concert began.

The second half of the concert was, to all but experts, monotonously like the first. Crash and wail, wail and crash, with perhaps a little too much of the minor key, and too depressing an association of ideas, tried the patience of the well-bred audience. The longest lame has, of course, a turning or a termination, and at last there was an end of Sir Frederick's concert. Then came the compliments from august lips, echoed by those who were within the purple of nobility, but not within the sacred royal circle; and the thanks and the leave-takings, the cloaking, the scramble for carriages. Lord Putney gave the young lady of Leominster House his arm. Sir Frederick Minim, with a heated brow, came to steer Lady Barbara through the crowd. As they stepped into the splendid Leominster carriage, much admired by the London throng of meek outdoor sightseers, the younger lady started, as she encountered the overbright eyes and queer smile of Chinese Jack. Lord Putney said a polite word at the carriage-door; then the equipage rolled off. 'Is he not charming?' asked Lady Barbara. The girl by her side was thinking of Chinese Jack, not of Lord Putney. She made no reply.

AN AGRICULTURAL EXPERIMENT WHICH PAID.

THERE is one question upon which two very different opinions are held by the two classes affected. The producer of vegetables, the market-gardener, is of opinion that the market is glutted, so much so, that he can barely make a living by their cultivation. He also laments that the masses know so little of the value of vegetables as to use not a tenth of what they might with advantage to their health. The consumer, on the other hand, laments that so little vegetable produce is sent into the market, for prices rule so high as to be almost if not entirely prohibitive to people of moderate means, to say nothing at all of those who are straitened. Whether the average inhabitant of our towns is aware of the hygienic value of vegetables or not, it is certain that were they plentiful and cheap, much greater quantities would be used.

Vegetables are almost as necessary for health as bread. Physiologists are pretty generally agreed that man's original food was fruits, nuts, and roots. In the nursery of the human race, the winterless regions of the earth, savage man found these foods in plenty all the year round. Migratory habits, however, carried him to regions where he could not find these except during a few months in autumn. For the nuts, he found a substitute in grain—cereal nuts—which is not a natural product, but an artificial product of civilisation. Our grains are the result of long and laborious improvements, by continual selection, on comparatively worthless grasses. The wild-wheat is so; so are our vegetables. The wild forms are mere weeds, quite if not altogether unfit for human food. The grain of wheat, oats, barley; the cabbage, turnip, pea; nay, our apples, pears, and plums, gooseberries and strawberries, are as much monuments of man's skill and triumph over nature, as any of his wonderful mechanical achievements; ay, much more so, for

they are the results of the labours of countless generations.

As grains have taken the place of nuts, vegetables have to a large extent taken the place of fruits, possessing as they do much of the good qualities of the latter. In tropical countries, the use of fruit predominates; nature so guides men. In countries such as our own, grains form the staple; but high health is best secured by the use of fruits and vegetables. That man is really a frugivorous animal is seen in the enormous amount of oranges he consumes, and also apples; but were these and the common *cabbage* more plentiful, and consequently cheaper, much more would be used. The only limit to their consumption is the power of the people to purchase.

It is not often that the thing substituted is better than that the place of which it takes. Yet wheat is better food than nuts, if hardly so sweet. Nuts are more oily; but butter on bread makes the substitute perfect, dietetically and gastronomically. Fruits or *their* substitutes—vegetables—are necessities. Without them, we should speedily become diseased, as was the case a century or two ago, when scurvy and other diseases, including even leprosy, raged furiously, and kept the population thin. The introduction of that all-the-year-round vegetable the potato, has done an amount of good that we fail to appreciate. So has the turnip, which has enabled us to keep our cattle healthy too, during winter, and has secured to us fresh meat and fresh milk instead of salted meat and hardened milk-cheese. Potatoes are not perfect substitutes, as the crave for other vegetables and fruits proves. But how is a supply at once abundant and cheap to be got? That is the question, and we think an answer can be furnished. The middlemen's services must be dispensed with; salesmen's commissions, retail dealers' profits, the heavy rents charged for the necessary shops, and the loss sustained by unsold, decayed vegetables, *must* be got rid of; and this is how it was done in one case, and may be in most. Like fish, vegetables are dear not because they are not abundant, but because of the many intermediate hands employed in their distribution.

Like most public benefactors, Mr Smith, as we shall here call him, helped the public by helping himself. Beginning life as a ploughman, he had, by sheer dint of shrewd economy and stern frugality, raised himself to the position of a small farmer, and supplied a portion of a manufacturing town in Scotland with milk. The town in question had grown rapidly; but, thanks to the exorbitant feu-duty asked by surrounding landlords, it had grown over into what were once gardens and open spaces; so the houses were huddled together in defiance of sanitary laws. The consequence was that almost the whole of the urban population depended on their greengrocer for every scrap of green food they used. But the same is true of every large town. The dairyman to whom Mr Smith sold his milk was also a greengrocer; and it occurred to Mr Smith one day that he would like to know the price of cabbages in a retail shop. He bought one; took it home, and weighed it; and found that, though it was by no means fresh, it cost just twopence-halfpenny per pound.

'Yellow-leaved, withered, unwholesome, and twopence-halfpenny a pound,' thought Mr Smith. 'Is this why people use few vegetables? Now, I would like to know if the market-gardener who grew this cabbage got a penny for it. I doubt it. And gardeners pay very heavy rents; they must buy all their manure, and work their ground wholly by manual labour—an expensive process. Now, if they can under these circumstances produce cabbages at one penny a pound, I can do it for half—at least I will try; and as Professor Johnston says, "No crop will produce an amount of food for human or animal use equal to the cabbage," and if I cannot find a market for the cabbage, I can buy an extra cow or two, and turn the vegetables into milk; for nothing beats cabbage, when moderately employed, as a milk-producer.'

Having thus resolved, the next step was to determine the best method of culture; for the usual 'garden' cultivation for cabbages, Mr Smith settled in his mind, was too expensive. Having no experience, he first took advice from a private gardener of more than usual intelligence; and between them they settled on the following mode of culture, which proved eminently successful. Mr Smith's farm being small, and the cows he kept being much greater than the farm could support, a great part of their food had to be bought. This bought food chiefly consisted of brewers' grains, oilcake, and bean-meal—these being calculated to produce much milk. But this purchase of food was the cause of his having much manure, and that of the richest sort, for straw being limited, the manure was concentrated. Then, just because of the nature of the imported food, the manure was peculiarly rich in phosphates and in nitrogen; and these, as Mr Smith found, on referring to his book—for he had studied agricultural chemistry much to his profit—were just what cabbages wanted. This rich manure was laid on at the rate of thirty tons to an acre in February, on land that had produced a great crop of champion potatoes the year before, and was therefore poor, but thoroughly free from weeds. The manure was spread on as evenly as possible, and ploughed in. Afterwards, in dry weather, it was smoothed with the roller, and then harrowed. In March, with a drill-plough very light furrows were made, twenty-six inches apart; and in the bottom of these were planted the cabbages. Half an acre was planted with Enfield Market, another half with large York. These were for a summer supply. Half an acre was devoted to large late Drumhead cabbages, and another half to Drumhead savoys. These were for winter. The soil was of the kind known as heavy loam, the most suitable for cabbages. Hardly a plant failed; and when one did succumb, it was quickly replaced by another from a surplus stock dibbled in thickly. Between the rows, the weeds were kept down by the drill-grubber; in the rows, by the hoe. When large enough, the plants were steadied by being earthed up as potatoes are. The crop was a splendid success.

How to profitably dispose of the produce, was the next question to be solved. Wisely it was determined to keep clear of market-salesmen and retail dealers alike; and as he had a bright intelligent son of fourteen, the plan adopted was to employ him to retail both milk and cabbages.

Success beyond expectation was the result; for at prices varying from three-farthings to one penny a pound the cabbages were rapidly sold. More might have been got; but the gardeners, having learned something, would then have come into competition. As it was, *their* produce had to be disposed of by being sent by rail to less favoured towns.

What the actual weight of produce was, we cannot, unfortunately, inform our readers; but, with a kind of second crop borne on the stems of the early sorts, helped by the free use of guano, the total income was one hundred and twenty-seven pounds eleven shillings and eightpence. Our informant saw Mr Smith's books and noted the amount. The total outlay for manure—valued at ten shillings per ton—rent, taxes, and labour, was forty-three pounds ten shillings—leaving a balance on the right side of eighty-four pounds one shilling and eightpence, or considerably more than Mr Smith's household expenditure. Nothing was allowed for carrying the produce to market; but the large amount of food in the shape of loose leaves, spoiled heads, &c., given to the cows, was considered more than a set-off against that.

It may be argued that in this instance there was a peculiarly favourable market. We don't think so. Equal prices can certainly be had in any of our towns. The really favourable condition in Mr Smith's case was that his farm was too small to produce food enough for his stock, which necessitated the importation of food, thus causing an abundance of rich manure. Without liberal manuring, no one need try to grow fine crops of cabbages. Then the soil was favourable. Light sandy soil is not so, especially in years of drought. Lastly, Mr Smith is a man of energy, and does most of the work, aided by his family, without calling in the assistance of outsiders, and is so well informed in agricultural chemistry as to know just what plant-foods to apply to land exhausted by such a greedy crop as cabbage is, to secure thereafter a full crop of corn, instead of less than a half, as less well-informed men would almost certainly do.

Since Mr Smith's first experiment, he has greatly extended the area devoted to cabbages, and has generally had results better even than those herein chronicled. We say 'generally,' because in one exceptionally hard winter he lost a good breadth by frost. The lesson he has learned is, to clear his fields as soon as possible. He now grows carrots, parsnips, rhubarb, and swedes, for market, and finds they pay much better than ordinary farm-crops, but finds nothing pays so well as cabbages.

ANCIENT TITBITS.

It is very generally noticed that whenever a good story is related, some one is certain to remark that he has heard it before. That this is not confined to anecdotes is well known to every reader of the older literature of our own and other modern nations. But whoever is accustomed to read much of Greek or Roman productions is accustomed to find there the germs at least of many modern ideas and remarks. It has been asserted, and with considerable plausibility, that

ideas, like elements, are few in number, and equally indestructible, and all that later ages can do is to arrange them differently. We will not venture to argue on this tough subject, but proceed to the more humble task of noticing some of the fruits of Greek and Roman wit and wisdom, and try if we can find their modern parallels. Every one can do something towards this, for a story which is perfectly familiar to one may be quite new to another. Even in a high-class paper like *Punch*, the reader may now and then meet with something well known to him. Though endeavouring to steer clear of repetition, we ourselves have doubtless told the same story more than once.

It is unfortunate that the mere fact of a good thing being in print often acts as a preventive to its proper appreciation. We miss the grave air, the demure look, the roguish twinkle of the eye, the real simplicity which in their several turns gave a zest to the joke. It is seldom that the wit which sets the table in a roar depends for its success on its own intrinsic merits; something is unconsciously credited to the surroundings. When strangers met Sydney Smith, for instance, at table, they were usually prepared to look upon anything he said as a good thing; and he himself relates that at a dinner-party he could not ask for a potato without the lady opposite putting her handkerchief to her face, and saying: 'Oh, Mr Smith, how can you be so comical!' A good deal of the effect of Talleyrand's incisive remarks was due to the perfectly impassive face with which they were uttered, coupled, too, with his extraordinary appearance and the fame he had acquired. It is said that when George Selwyn came out with anything good, he was accustomed to put on a sweetly demure look, to which we feel certain was owing a great measure of his undoubted success.

We have no jest-book of the ancients existing. Cicero's slave and friend Tiro made a collection of his master's sayings, which was highly prized, but has unfortunately not descended to us. Our only sources of information are the works of a few Greek and Roman writers in which some of his good things are scattered about. The great orator was, if we may venture to say so, the Sydney Smith, Theodore Hook, Sheridan, and Selwyn of antiquity all rolled into one. Just as one may at a venture attribute to Shakespeare any uncertain quotation, or to any of the wits we have named any joke which wants a parent, so anything good in Latin was ascribed to Cicero. He himself in the second book *De Oratore* has preserved for us a good many sayings of his predecessors, most of which we are compelled to say are rather dreary. In fact, the good sayings of antiquity are not such as proceed from a happy juxtaposition of incongruous ideas, which please by surprise. They are rather pithy maxims, delicate turns of expression, homely truths, conveyed in irreproachable style.

The loquacity of barbers is proverbial. It is evident that there is something in the profession which conduces to it, or how shall we account for the following anecdote, which dates several centuries before Christ? Archelaus of Macedonia going to have his hair cut, was asked by the artist: 'How will you have it cut?'—'In silence,' said the monarch. Do we not all sym-

pathise with him? The same king had some dirty water thrown over him. His courtiers would have the offender punished. 'No,' said Archelaus; 'he didn't throw it over me, but the man he thought I was.' This reminds us of Macaulay in one of the Town and Gown Cambridge riots, when a dead cat came full in his face. The man who had thrown it came up to him and was profuse in his apologies. 'I didn't mean it for you, but for Mr Adeane.'—'Oh, very well, my good friend; but I wish you had meant it for me, and hit Mr Adeane.'

Everybody has read of the qualifications necessary to make a good general, which appear to be as many as those required to make a poet. A great point is that the soldier should leave nothing to chance, but be prepared for every emergency. This is pithily put by Lord Wolseley in the *Soldier's Pocket-book*, when he says that the greatest disgrace a general can suffer is to have to say: 'I never thought of it.' This is found in Plutarch. Iphicrates, when marching with his army through a friendly country, fortified his camp every night, and took the same precautions as if the country was hostile. When reproached with the absurdity, he replied: 'The worst words a general can utter are: "I never should have thought it."

We all know the rich man, who, finding fault with an extravagant son, told him that at his age he did not squander his money. 'No; but you hadn't a rich old hunk of a father, like I.' We can go back to Plutarch again for this. Dionysius reproving his son for bad conduct, said: 'You never knew me do so.' 'No,' replied the youth; 'but you hadn't a king for a father.'—'And you won't have a son a king,' said the monarch.

The well-known saying of Brotherton, the member for Salford, deserves to be written in letters of gold: 'My riches consist not in the extent of my possessions, but the fewness of my wants.' This is very like the saying of Socrates, when some one remarked it was a great thing to have one's desires. 'It is still greater,' said the philosopher, 'to have no desires.'

A great deal has been philosophised on the fact that glory and disgrace are often only different in degree. We can trace it back to a very remote period. Democritus saw a thief taken to prison. 'Poor man,' said he, 'why didn't you steal a great deal, and then you could have sent others to jail?'—It is universally recognised that the hard-working father makes the fortune which the son squanders. This is an apothegm of Cephisodorus. We have also been often assured that the difficulty in making a fortune is to get the first few thousands; after that, the process is comparatively simple. This was quite well understood in old times. Lampi being asked how he made his great fortune, said: 'Easily enough; but the little one with great exertion.'

Hardly any saying is better known than that 'Speech is silver, silence golden.' Simonides used to say that he never regretted holding his tongue, but very often was sorry for having spoken. Every one knows the modern parallel to the saying of Socrates: 'The wicked live to eat and drink; the good eat and drink in order to live.'

Certain sayings now proverbial can be traced very far back. The Olynthians denounced to Philip of Macedon many of his courtiers as being

traitors. The king told them they were rude and illiterate to call a spade a spade.

In the way of neat retort and repartee we can find many instances. Granicus recommended a bad orator to drink cold hydromel. 'But I shall ruin my voice.' 'Better that than your client,' was the reply. Another of the same sort asked Catullus if his speech just delivered had not excited compassion. 'Why, certainly; there was not a soul who wasn't sorry for you.'

A Sybarite on a visit to Sparta partook of the homely public meal. He then observed: 'No wonder the Spartans fought well, for the greatest coward would rather face death than live on such fare.' Demades compared the Athenians to a clarionet—'Take out their tongues, and they are good for nothing.' A certain schoolmaster was reading badly. Theocritus said to him: 'Why don't you teach geometry?' 'Because I don't understand it.' 'Then why do you teach reading?' —A thief caught in the act, said to Demosthenes: 'I didn't know it was yours.' 'No,' was the reply; 'but you knew it wasn't yours.' —Augustus saw a knight helping himself from a pocket-flask at the games, and sent word to him to say that when he wanted to drink, he went home. 'Yes,' retorted the knight; 'but he wouldn't lose his place, as I should.'

Now comes an old friend which we have seen attributed to most of the well-known wits; Quintilian, however, relates it of Cicero. A lady remarked that she was thirty. 'I know it is true,' was the reply; 'I have heard you say it these twenty years.'

Domitia, wife of Passienus, complained that Junius Bassus accused her of meanness, and gave as an instance that she sold her old shoes. 'I never said so,' was the retort; 'I said you used to buy old shoes.' —This is paralleled by an anecdote of Rogers. Lady — reproached him for going about London reviling her. 'On the contrary,' said the poet, 'I pass my life in defending you.'

Here is another old acquaintance. Pomponius had received a wound in the mouth, and would have Cesar believe it was received in his service. Cesar, however, advised him not to look back, the next time he ran away. We have seen this ascribed to several jokers. The advice is thoroughly sound, and reminds one of that given by the friend of a sharper who had been detected cheating and thrown out of the window. He was recommended in future always to play on the ground-floor.

A certain Cynic asked Antigonus for a drachma. 'That is not the gift of a king.' —'Well, a talent, then.' 'That is more than a Cynic should receive.' —News arriving at Athens that Alexander was dead, the orators rushed to the public places and began to incite the people to rise up and declare war. Phocion, however, advised them to wait till the news was confirmed. 'If Alexander is really dead, he will be none the less dead to-morrow, and for a long time afterwards.'

Lysias wrote a defence for a friend, who brought it to him, saying it pleased him immensely at the first reading, but he didn't think so much of it the second and third times. 'You forget,' was the reply, 'that the judges will only hear it once.'

That the spirit of the poor-laws is no new thing, may easily be seen from the words of a Spartan to a beggar. 'If I give you a sixpence, it will only make you more of a beggar than you are. The first man who gave you alms taught you to do nothing.' This is exactly what is impressed upon us by the Mendicity Society, and reminds us of the bishop who said he had done many foolish things in his time, but he could honestly say he had never given to a beggar in the street.

Alcibiades, when about to be tried on a capital charge, absconded, saying: 'What's the good of getting off, when you can get away?' —Iphicrates, who was the son of a shoemaker, was reproached with his mean origin by a long descended Athenian. 'My family begins with me; yours ends with you,' was the retort.

The bath-keeper was drawing a large quantity of water for Alcibiades. 'He must think him a very dirty fellow,' said a Spartan.—This is paralleled by the girl who went to service for the first time, and wrote to her mother that her master and mistress were very dirty, for they washed their hands ever so many times a day.

The innumerable readers of Macaulay must remember the story of the criminal who had the choice of the galleys or the reading of Guicciardini, and naturally chose the latter. But the war of Pisa was too much for him, and he asked to change.—Philoxenus of Cythera was sent to the quarries by Dionysius because he did not like the monarch's poetry. He was, however, recalled, and had some more read to him, whereupon he got up to go. 'Where are you off to?' asked Dionysius. 'To the quarries,' was the reply.—This was also paralleled by the late Earl of Derby, who received a sample of sherry which the wine-merchant recommended as not having gout in a hogshead. The Earl replied: 'Sir, I have tasted your sherry, and I prefer the gout.' —A parasite made his appearance at a wedding-feast, and was told he must go away, as there was no room. 'Count again,' said he, 'and begin with me.'

Cicero sometimes got as good as he gave. Laberius, a knight, came late to the theatre, and looked about for a place, when Cicero called out: 'I would give you a place if I had room.' —'Why, every one says you are used to sit on two stools,' was the reply.

Pollio said of Augustus: 'It is difficult to write against a man who can proscribe.' This remark has been ascribed to many, and no wonder, for it is very obvious. An amusing addition was made to it in reference to Frederick the Great: 'It is difficult to argue with the owner of thirty legions and such very thick boots.'

There are plenty more instances of good things to be gathered from the ancients; but a very great many cannot bear repetition, both from difference in tastes and from allusions which would need explanation. We cannot, however, pass over one of the most graceful compliments ever paid, and all the more noteworthy from the historical importance of the speakers. After his overthrow, Hannibal took refuge at the court of Prusias, king of Bithynia. There Scipio came on an embassy. The two great rivals met, and in conversation, Scipio asked Hannibal whom he considered the greatest commander. 'Alexander,' was the reply.

—‘And who next?’ ‘Pyrrhus.’—‘And who after him?’ ‘Myself.’—‘And what would you have said if you had beaten me at Zama?’ ‘In that case, I should have put myself before Alexander and Pyrrhus and all other generals.’

MISS GARSTON'S CASE.

IN FIVE CHAPTERS.—CHAPTER IV.

As the shock of the discovery of Miss Garston's critical situation began to subside, other expedients for meeting the difficulties besetting her and myself arose in my mind. Why should I continue a single combat with Mr Lampart? If the phial contained the deadly drug I suspected, my relationship to the young lady was no longer the same. I was not merely dealing with disease, but with villainy of a most atrocious kind. Was it not right, for my patient's sake, that I should immediately obtain the opinion of an abler physician? Supposing my skill to be consummate, was I calm enough for safe guarding an imperilled life?

I determined to call upon Dr Dawson. He was a kindly, though haughty old gentleman, as I knew from some slight intercourse I had had with him. His notions of professional etiquette were extreme. But he was the most eminent physician of the town, and one of the social magnates.

He received me more graciously than I had hoped for; and had no sooner heard of the phial and my opinion of its contents, than he entered into the matter with the greatest interest. He had recently been made a borough magistrate, and that perhaps influenced him.

‘If you are not mistaken, Mr Leighford,’ said Dr Dawson, when I had finished my story, ‘this affair is indeed serious. You are young, and therefore liable to draw distorted conclusions from obscure symptoms. I don't say that you are under erroneous impressions. You *may* be right. But you *may* also be wrong. I have been young, and I recall with humiliation the many silly, crude notions I had when I first began to practise. I thought I knew more than those who examined me; and was, in short, puffed up with my own vanity and self-confidence. I have read that article of yours upon Phthisis, with your views on which I cannot agree. Your ideas are truly anarchical. You defy all experience. Have you rushed to conclusions with similar haste in the case of Miss Garston?’

I rose indignantly from my seat.

‘Do not be offended, Mr Leighford,’ continued Dr Dawson with a complacent shrug. ‘I do not mean to offend you in the least. You have asked me to visit your patient; and, as an older man, I think I am not trespassing the bounds of professional decorum, when I ask if you have not come to a precipitate conclusion. Remember, Mr Lampart occupies a most respectable position; and if you should bring a false charge against him, you will not only blight your own career at its beginning, but will bring a certain odium upon the profession. I do not wish to be mixed up in a stupid *fiasco*’.

‘Then you decline to meet me in consultation?’ I demanded, taking my hat from the table.

‘On the contrary, I feel it my duty, as a magis-

trate, to see this lady,’ returned the old gentleman with some hauteur. ‘But I must ask you, as your senior, to defer to my advice, and to follow my counsel, if such be needed. You are necessarily ignorant of many things, professional and other; and I think it only right that you should submit to my guidance. A hasty and ill-advised step on your part may involve most respectable people in a web of infamous scandal. Your own ruin would follow, and every medical man in the town would be injured. Will you be guided by me?’

‘Certainly,’ I replied, confused and irritated by the pompous old stickler who sought to dominate me. ‘I am here to ask your assistance in a most momentous difficulty, and must perforce be subjected to your opinion. But I beg you not to delay. I am fully impressed by the gravity of the position I am placed in. At what hour will you meet me at Mr Lampart's house?’

Dr Dawson consulted his diary, and after a pause, fixed upon two o'clock.

I hurried back to Miss Garston to prepare her for the interview, and also to get together my notes of the case, so that I could meet the inquiries and criticisms of my pragmatical colleague. I found my patient much refreshed by the sleep she had enjoyed, and she consented, though with great reluctance, to receive Dr Dawson.

Punctual to the moment, that gentleman arrived; and it was with no little anxiety that I retired with him after his examination of Miss Garston.

He paced Mr Lampart's long dining-room for several minutes before he spoke; then stopping abruptly before me, he said: ‘Mr Leighford, you have made a serious mistake in allowing this matter to reach its present crisis. Although I doubt your opinion as to the extreme danger of your patient, I agree with you that she is under the influence of the insidious poison which the phial undoubtedly contains. Had you called upon me several days ago, the lady and yourself might have been spared much, and the perpetrator of the crime might have been arrested.’

I was annoyed by Dr Dawson's manner. ‘I have done my best for Miss Garston,’ I said, ‘and you could not have done more.’

The old gentleman bowed sarcastically; then, resuming his magisterial air, he went on: ‘Pray, keep your temper, and also keep your promise. Remember, you are pledged to follow my counsel.’

I cannot express the vexation I endured while my senior spoke. Bitterly did I regret that I had not gone to another of my professional brethren. My unfortunate treatise on Phthisis had mortally offended Dr Dawson, I afterwards learned, as it was opposed to a theory of his own. Thus, his kindness was suppressed, and all my doings were seen through a prejudiced medium.

‘And now, Mr Leighford,’ said Dr Dawson, ‘I must prescribe a course of action outside of medicine. Miss Garston will rapidly recover when the *cause* of her illness has been removed. You must go hence and take such measures as will lead to the arrest of the *cause*’.

I started and grew suddenly pale. A mirror opposite showed me a ghastly reflection of myself.

'What is the matter?' cried the old gentleman.

'I do not like bringing the police upon the scene,' I faltered. 'You know that I have no direct proofs against Mr Lampert. The phial has come into my hands in a roundabout way. Would it not be well to have it carefully analysed and—and—do all that is necessary before taking extreme measures?'

Dr Dawson's face grew more lowering with each word I uttered, and the form of his visage was wholly changed from the pedantic superciliousness it had borne during the earlier part of our consultation. I felt alarmed, though I could not tell why.

'Mr Leighford, your hesitation to bring this dangerous man to justice places you in a most invidious position.' The doctor spoke with severity.—I was quite abashed.—'You are young,' he continued in a more kindly tone, 'and know nothing of the exceeding gravity of the circumstances of this case. If you refuse to put the police to work, I shall take the matter in hand at once, and that will probably lead to your arrest, Mr Leighford.'

'Good heavens!' I cried in an agony of dread, 'what have I done?'

'That would be determined by a judge and jury,' returned the doctor with epigrammatic promptness.

I was confounded by this view of my position; and yet I was annoyed. I had perhaps been over-confident, but I had not acted like a fool. I therefore could not help retorting: 'I think I could prove that I have neither been an idiot nor a homicide in Miss Garston's case.'

'Pooh!' snapped the old doctor. 'Prove that you have *nous* enough to get out of the affair without compromising yourself further. You ought to have had a consultation long ago. Go to the head-constable at once.'

I looked at the hard red face before me almost beseechingly. The idea of being mixed up in a police-court trial was almost revolting. I had a horror of publicity; and then I thought of its effect upon Miss Garston. But the hard red face was relentless, and I felt that I must submit.

'I am going into town,' said Dr Dawson, pulling on his gloves with graceful deliberation, 'and I will drop you down at the head-constable's office. Get your hat; I must be off.'

A quarter of an hour afterwards, the doctor's magnificent pair of bay cobs were pulled up with a grand flourish before the police office; and I stepped out of the carriage miserably flurried, wishing that Mr Lampert had been a thousand leagues away on the fatal night he had linked my fate with his.

Dr Dawson, who followed me into the office, was received with the consideration due to a magistrate; and the old chief-constable listened to my communication with respectful attention. This somewhat calmed me, and I was almost at ease when the doctor rose to go. I would have gone also, but the chief-constable requested me to stay.

'This will be a case for Inspector Knabman,' he said; 'you must see him.'

Responding to a call down a tube, a tall gaunt man came in. His face bore the queerest mixed expression of simplicity and astuteness that could

be conceived. Mr Knabman was a celebrity that everybody had heard of, and I felt no little curiosity in coming into such close contact with him. While his superior officer was relating the purpose of my visit, the famous detective kept his eyes fixed upon me with a calm investigation that explored me to the core. I do not know if he was satisfied with me, for his opinions were not accessible to such an unsophisticated youngster as I was.

Having heard the particulars of the case impassively to the end, Inspector Knabman subjected me to the most drastic questioning I have ever known. I told all my facts, divulged all my conjectures, and made such a complete deliverance of everything that had happened during my attendance upon Miss Garston, that even my examiner appeared to be contented at last.

'Is this Italian herbalist, Pandofini, known?' asked the head-constable.

'Yes, sir,' replied Mr Knabman shortly, going on with his notes, for he began to make copious memoranda of the case. These being completed, he afterwards corrected them by a few secondary inquiries; then I was permitted to depart.

I walked slowly homewards, thinking over the whirl of things, in which I was being swept along almost as resistlessly as a straw down a rapid stream. I pondered on the contact of the destinies of outsiders with my own. A little while ago, Mr Lampert was as unknown to me as an inhabitant of Sirius; of his existence I was as unconscious as of the men who may tread the earth a million years hence. And this unsuspected personality had sprung suddenly from out the infinite crowd of humanity, had riveted my personality to his in the indissoluble bonds of crime. By what strange concatenation of things are men conjoined in this world!

From Mr Lampert, the transition to his victim was natural. If I had not been called to attend Miss Garston, if another medical man had been chosen to mask the murderer's designs, what would have happened? Perhaps the poor girl would have been hurried from the stage of life as abruptly as her father. When once we give up ourselves to a stream of speculations, there is no saying how far we may be carried, or what new and startling vistas we may behold. I had in some way saved Miss Garston's life. That life would go on perhaps for years. What sort of career would it be? Then I remembered how lonely and friendless the poor girl was. Probably the downfall of Mr Lampert meant the financial ruin of his victim. Thus poverty, with its corroding anxieties, with its narrow and darksome horizon, was sequential in the hideous train of suffering that Mr Lampert had put in motion. How could a lady nurtured in tenderness and elegance endure the shocks and disgusts of the nether world into which beggary would plunge her? Miss Garston was no longer my patient. I saw her in new relations, a lone orphan, bereft of all that makes existence desirable. For the first time, I dwelt upon her personal appearance; her dark questioning eyes, which had long ceased to glare distrustfully into mine, and which met me with the sweet confidence of a child. Her delicate features, over

which anguish flitted in a hundred modes, as

pitiless villainy worked its deadly way! Those fair young cheeks wasted, withered in their early bloom. The lips made for smiles, pallid, distorted; her bosom rent with agonies, which the monster who caused them could never feel. Why, I asked myself, are the base and the merciless permitted to inflict the extremities of physical and mental pain on the innocent and the helpless? How can the sublime intelligence of a man be degraded to infamies like these?

I reached home in a species of frenzy, which alarmed my mother and sister exceedingly. I am not of a demonstrative nature; thus my agitation was the more distressing to others and to myself. I told my mother all that had happened without reserve; and in doing so, I grew calmer. Then we had a long conversation respecting Miss Garston. How should I break to her the news that Mr Lampert was about to be arrested for her attempted murder? A vast, yes, a fundamental revolution was trembling around her; should its approach be announced, or was I to permit it to burst upon her unawares?

'If she is at all able to bear the communication, tell her,' said my mother. 'You will of course quietly prepare her for it. Women can endure far more than men suppose. Besides, if Miss Garston knows that she is in no further danger from that horrid man, that will sustain her.'

'But where is she to go afterwards?' I asked. 'I know she will not stay in Mr Lampert's house.'

'Bring her here,' returned my mother resolutely. 'Your sister and I will care for her until she is able to decide upon her future. You are sure that she will recover?'

'Dr Dawson is positive of it,' I returned. 'He says I have been mistaken as to the peril she has been in. Of that I have my own opinion. Still, I am bound to admit that she has rallied marvellously in a few hours. If I find her stronger when I return, I shall venture to tell her a few particulars about Mr Lampert being in trouble. But I will not mention the poisoning. Something she must be told, to account for the changes that will take place in the house. I hope Mr Lampert will not be arrested at home; that will demoralise the servants, and they will frighten my poor patient, and goodness knows what the result may be.'

It was now nearly four o'clock. I hurried to prepare Miss Garston for another change in her fateful life, fearing lest it might have been revealed by the event itself. But all was in its wonted order. The fine old mansion never looked more imposing. Upon it, the after-glow of a frosty sunset fell resplendently; its windows gleamed with rejoicing fires, as though a grand gala were in progress. The evergreen shrubs along the pathway were more witching than at summer's noon. By the side of the house, a gorgeous conservatory sent forth a glow of flowery loveliness that looked like fairywork. Everything bespoke the home of wealth, taste, and luxury. And in the house, all was as usual; the servants pursuing their duties; from the kitchen came a faint hint of an exquisite repast preparing; along the lobby the portly butler walked leisurely, with a plate-basket gleaming and jingling in his hand.

Miss Garston was still improving. She had

just dismissed the attendant who had performed her toilet, and she lay in the soft languor of the fatigue it had caused. The sun fell rosily upon the bed, and lent a faint tint to the pale face lying on the pillow before me. A smile, a bright welcoming smile, and a flash from the sunlit eyes, told that I was expected.

I stood entranced for an instant at the changes that met my eyes. Hitherto, the sick-room had been darkened to a twilight; the expression on my patient's face had varied from supplication, to terror and despair. Now all was radiant, transformed. Why did I thrill as I took Miss Garston's hand? Why did I tremble as I spoke to her?

But my embarrassment did not last long. I had a duty to perform infinitely more difficult than any that had fallen to my lot previously. With the utmost caution I opened the subject of Mr Lampert's affairs. I told of his business distresses; how he would have to leave his present abode, and live on a lower level, and how Miss Garston would need another home. The prospect did not alarm her, as I feared; nay, she seemed almost glad at the impending separation from her self-styled guardian. Then I ventured to offer the hospitality of my mother's house until she was convalescent, and begged permission for an interview on my mother's part. These propositions somewhat disturbed my patient. I saw that I had gone as far as her strength would admit of, and bidding her rest, I left her with a promise to return later in the evening.

I had broken the ice. Miss Garston was prepared for the inevitable, and her energies had seemed equal to the shock. But I quailed at the thought of the further strain that would be put upon her enfeebled powers, when Mr Lampert was brought to trial.

When I reached the library, I cogitated upon the courses that lay open to me. Should I wait where I was, until I learned if Mr Lampert were arrested, or should I return home to meet Mr Sleigh the book-keeper, as arranged? I determined to stay, and so prevent any possible mischief to my patient. I therefore wrote a note, bidding Mr Sleigh to come to me without delay.

A FEW WORDS ON THE SALMON.

It is difficult, in the present state of information on the subject, to appraise with anything like accuracy the amount of loss inflicted upon our salmon rivers by the disease from which this fish has recently suffered so heavily. The disease referred to is attributed to the attack of a fungus called *Saprolegnia ferax*, which has been long known to infest sickly fresh-water fish, and is very often seen on gold and silver fish insufficiently supplied with fresh water. It commonly attacks first the tail and other fins; but in the tributaries of the Solway, in the winter of 1876, it broke out with a hitherto unknown virulence, and spread shortly to other streams. Its deadly development in these Solway rivers was first marked by the presence of a small sore on the snout or top of the salmon's head, described by careful observers as if cleanly eaten or scraped

out, and which in the course of some weeks increased in size and depth, till in many cases half the head seemed eaten out, the fish gradually becoming weakened, and only then becoming visibly affected with the fungus growth, which rapidly spread, eating into the flesh of the fish, and destroying it. This peculiar development of the disease has of late almost—if not entirely—disappeared from these rivers, though the fungus growth very often yet begins on the snout, afterwards spreading to the fins and other parts. From the Tweed in one year, fourteen thousand diseased fish were taken dead, and from the Tay in the same year two thousand; while from the Eden and its sister stream, the small river Esk, nearly as many have been taken for several years. This fungus seems to grow equally well on the dead bodies of its victims, which include many kinds of freshwater fishes and even insects.

The life-story of the salmon has been often written, though no two narrators in telling the story seem to agree. The fish is mysterious in many of its movements, doubtless from the fact of its being a sea-fish during certain portions of its existence. With unerring instinct the female deposits her eggs in some shallow stream; out of these ova, issue in due course tiny creatures, which in course of time become parrs. In the months of April and May, at the varying ages of one, two, and even—though in smaller number—three years, the parr acquire a new set of true salmon scales, and are then known as smolts; after which they are impelled by instinct to seek the salt water, where for some weeks they grow rapidly, some of them returning, as has been proved beyond doubt, as grilse in from six to ten weeks. Curiously enough, even parr of the same brood do not all become smolts the same season; nor do all come back as grilse, the presumption being that many remain longer in the sea, some of them not returning to their natal streams till early the following spring, as spring salmon.

That it is to the young stock we have mainly to look for our food-supply, is evidenced by the fact, that of six hundred 'kelts' (spawned fish) taken from the Tweed in one season, and carefully marked and returned, not one was ever heard of again in any river; and as further proof that comparatively few large fish ever return to spawn, we have the fact that, in many rivers where twenty-pound fish are plentiful year after year, there are yet few fish of thirty pounds; while fish ranging from thirty-five to forty pounds in weight are quite rare.

As we know from marked fish that salmon fry grow some seven pounds in the first two or three months after going to sea, and continue to grow rapidly while there; and as we know that salmon have but rarely been caught in Scottish waters weighing sixty or even fifty pounds, and very rarely indeed as high as seventy pounds, while we have no reason to

doubt that salmon of twenty or thirty pounds-weight go on increasing rapidly in weight, it seems fair to conclude that the great proportion of *large* salmon which spawn in our rivers never return there. If they did, we would surely have many more fish of forty or fifty pounds-weight and upwards. If it be a fair conclusion, that large fish, being less active, more readily fall victims to their sea-foes, the great desiderata are the safety of spawn and 'fry,' the kelts being of comparatively little importance. In many of our rivers, salmon ascend throughout the whole year. Many spawning fish do not leave the sea till December, and these doubtless succeed in spawning ere they are affected by disease; and so strong is the reproductive instinct, that plague-stricken salmon cling to the spawning-beds even when unable for any length of time to hold their own against the current. Thus the seed sown is still abundant. Sea-trout, which in some rivers ascend almost exclusively in May and June; and herling in July and August, being longer exposed to the virus in the disease-tainted streams before the breeding season, have suffered more seriously; in the Solway rivers these beautiful fish have been greatly decimated.

A formidable-looking bony or cartilaginous hook grows on the point of the lower jaw of the male salmon as the breeding season approaches, fitting into a socket in the upper jaw when the mouth is closed. This 'gib,' as it is termed, disappears somewhat mysteriously soon afterwards; and the common belief in Scotland is that it is specially provided for digging out the stones and gravel (the 'redd') wherein the female fish may deposit her roe, and for covering it up as the work proceeds. This is a popular fallacy. The skin of his 'gib' is as delicate as that of his snout, and little fitted for digging stones and gravel; while the position of the hook is unfavourable for such work. Had it projected outward instead of inward, or downward rather than upward, it had surely been a better adaptation.

The 'redd' or hollow in the gravel of the stream, which is the work of the *female* salmon, is usually supposed to be the depository of the spawn, and is formed during the process of spawning. Nevertheless, it is an undoubted fact that the fish deposits but a fraction of her eggs in this excavation. Indeed, it would take a very clever fish to continue burying her thousands of golden grains in one basin for three or four days—the usual spawning period when undisturbed—without casting out continually the seed already planted. Salmon select swift-running streams for spawning, and prefer the upper part or crown of a stream, their instinct no doubt guiding them to cast their roe where there is a stretch of sharp running water below, with a suitable stony bed for its retention. The female selects her place,

and as she casts her roe, turns upon her side, making the redd by plying her great tail most vigorously, falling back in the stream and rising towards the surface of the water in the process. In making the redd, the plying of the tail-fin, aided by the action of the swift current, whirls the gravel and stones down stream, till in course of time a basin is hollowed out, and the excavated stones and gravel form a scattered heap below.

This action of the tail in raising the gravel may be readily illustrated by the sculling of an oar in similar water; and to discover how roe is unlikely to lodge in a salmon redd, let any spective take a few small pellets of clay and float them from his hand, when it will be seen that the trend of the stream caused by the dip in its bed casts them upwards, whirling and scattering them as they pass over the shallow caused by the raised gravel. In fact, a pair of human hands with a dibble could scarcely plant roe in a redd.

A further proof that the redds are not the true seed-beds might be found in the fact that these are soon levelled up by floods, and that thus much of the roe would be hopelessly buried. There is abundance of spawn laid in the chief rivers in Scotland, and their salmon-producing capacity is probably only limited by the food-supply for the young fish.

Mr Lloyd, in his *Scandinavian Adventures*, gives the result of the observations of a friend (Mr A. Keiller) during a long residence on the river Save in Sweden. That gentleman erected an observatory over a spawning stream near his residence and made long and careful observations of the spawning salmon. He says: 'The station of the male at that time is at six or seven feet distance directly in wake of the female, and just beyond the heap of stones—that is, at the tail of the redd.' Mr Keiller tells us that during the day the female made numerous little excursions, chiefly to the slower water above. He says further: 'Much of the time of the male fish is occupied in driving off interlopers;' and it seems a fair inference—from his anxiety to hold his position, and from the persistent efforts of other males in disputing it—that the tail of the redd, or even farther down in a line with the redd, is the much-coveted stance. This is strikingly shown when the male fish makes a lengthened pursuit of an antagonist, during which time a third male—often a very much smaller fish—takes his post and holds it till the return of the rightful master.

Though the station of the male fish is considerably lower down stream than that of the female, and is thus, as it were, beyond the range of her vision, she will nevertheless insist upon a suitor being there, as was proved by Mr Young of Invershin in his evidence before a Committee of the House of Commons in 1824. He stated that a female salmon which had its attendant male killed from behind it nine times in succession, retired on each occasion to the pool below, bringing back with her a fresh mate, and on the ninth errand not finding a salmon, returned with a large male yellow trout.

Pennell, in his *Angler Naturalist*, quotes an account of a great salmon-battle witnessed by fishermen on a spawning stream in the Findhorn, in which one of the fish was killed, and on being

examined, was found torn to the bone from head to tail. Pennell adds: 'The weapon in all those attacks is the cartilaginous horn on the lower jaw, which is used as a sort of battering-ram, the fish rushing on open-mouthed.' Keiller says the male fish attack each other 'usually with closed mouth, the hook of the lower jaw imbedded in the upper, thus affording the latter support, and still further lessening, as applied to himself, the effects of the concussion.' This seems both better authenticated and more probable than Mr Pennell's theory of making a battering-ram of the point of the lower jaw. The impetuous rush of a large salmon, ending in a blow on the point of an open lower jaw, would assuredly dislocate that weapon of offence without doing much damage to his adversary's tough skin.

Some newspaper writers have been crying out against that unique and beautiful little bird the water-ousel, as a destroyer of salmon roe. These birds are nowhere numerous, and do not particularly frequent spawning-ground in the spawning season. They may pick up a few outwashed grains; and he is a poor proprietor and a needy angler who would grudge these to such a charming winter songster and pleasant river-side companion. The late Mr Buckland examined the crops of several water-ousels shot on spawning-ground without finding a single salmon egg; the contents *per contra* being insects, some of which are believed to be destructive of salmon roe.

Pike, trout, herons, and gulls destroy myriads of young salmon; and we have seen wild-ducks sweeping a piece of water—exactly as fishermen sweep a long circle with their nets—and driving the small fish into shallow water, where they rapidly inclosed them. But the destruction of fry by the foregoing gluttons is probably surpassed by the havoc wrought amongst the fry by their own progenitors the 'kelts.' This is most serious in small rivers, and in dry spring terms, when said kelts do not get to sea to satisfy the voracious appetite which seems to come upon them with their new spring coat of scales. At such times, kelts have often been observed stationed at the narrow tail of a stream, snapping up smolts in rapid succession as these allow themselves to drift seawards, tail first; and when in such dry terms the kelts may be seen in hundreds in one pool, some conception may be formed of the loss at a time when smolts are ready to become salmon.

With our present ideas as to the heinousness of spearing breeding salmon, it is curious to look back a few years and to see how popular this pastime then was. Indeed, nearly every town and village in the vicinity of a salmon stream has its old men who yet revert, with a sparkle of youthful fire in their eyes, to their 'leistering' exploits. Now that salmon-leistering has been made illegal, much of the Border sentiment that once pervaded the exciting pastime has died out, though there is yet to be seen an occasional 'light' illuminating some well-known salmon-lie, and occasionally affrays are heard of between water-bailiffs and poachers. Still, the preservation of salmon is not without certain evils, if we can believe the assertions of trout-fishers, who declare that their speckled quarry is on the decrease owing to the comparative

scarcity of food induced by the voracity of the young of the salmon, and by the stern preservation of kelts. Be this as it may, the curtailment of angling privileges for sea-trout and salmon in upper waters in the latter months of the year, when such fish are only there to be found, has doubtless been felt as a hardship by many an old farmer and shepherd among the hills. And though the fish are not then in best condition, the sport was good, and the food was relished as a change of diet, and in truth might not be—especially when split and kippered—greatly inferior to many a breeding salmon now taken in November from the favourite casts of the Tweed. It is certain that in this matter lower proprietors have gained at the expense of upper proprietors and residents, though it seems to be a somewhat difficult matter to readjust the balance.

CUPID AT LAW.

'AT lovers' perjuries, they say, Jove laughs.' So also do good-humoured mortals enjoy a laugh at those 'pretty follies,' whenever the dainty missives containing them happen to stray before the vulgar gaze. This itself can, we suspect, surprise few of those fond married couples who remember the style of their own early love-letters; for sober reason, although claiming to be the pilot of the passions, seldom condescends to aid in inditing such flighty epistles.

In these days, readers—whether they be sympathetic or quizzical—are more apt to wonder why so many affairs of that peculiarly tender and confiding nature find their way into our usually dull law-courts, and thence over the land as spicy material for tea-table gossip. Almost every *niſt prius* list at the principal assizes includes more than one claim by slighted sweethearts for pecuniary damages from their faithless swains; and similar actions are by no means unknown at the superior courts in London. The frequency of such cases must puzzle even those who are quite conscious that 'the course of true love never does run smooth.' Can it be that Cupid's darts are worse aimed or less potent than of yore, else why does he so often assume the prosaic guise of a lawyer with a bag full of briefs seeking redress before demure judges for forsaken clients? An answer is more easily asked than given. In any case, some of our legislators are about to try and stop what they regard as a growing scandal.

With this view, Mr W. S. Caine, M.P., has given notice in the House of Commons of his intention to introduce a Bill to abolish actions for breach of promise of marriage. The coincidence that this was notified when such a case was actually pending against a well-known Irish member of parliament, tempted some of his jocular colleagues at Westminster to call the proposed measure the 'Biggar Relief Bill.' The measure, however, is (while we write) not yet passed, and, not being retrospective in its provisions, it can afford no consolation to defendants already condemned in damages. As to whether the Bill should pass, there will be some difference of opinion, even amongst those who hold most strongly that it is beyond the province of ordinary jurors to assess injured affections. The exclusion of this element

from the purview of a legal court is properly insisted upon by the judges, and therefore true-hearted gentlemen rarely, if ever, seek judicial reparation when befooled by pretty coquettes.

There are, however, many practical considerations to be taken into account, especially if the plaintiff be a female, as is almost invariably the case. With the fair sex, as a rule, the prospect of a protector and a home for life depends upon betrothal, so that no affianced lover may be allowed lightly to break his vow of fidelity without the risk of a substantial penalty. About a dozen years ago the legislature made certain amendments in the law on the subject, by providing that either of the two persons directly concerned might appear in court personally and give evidence upon oath. Previously, the fact of the matrimonial pledge had to be proved mainly by letters passing between the once devoted pair, and by the keen observation of match-making mammas or other watchful friends. Both of these expedients of course proved futile when the fickle one had either refrained from committing himself very definitely in black-and-white, or was not demonstrative among acquaintances about his hymeneal intentions. Enamoured swains don't choose to make their delicate avowals in the presence of third parties, and never pop the momentous question before witnesses. It therefore seems reasonable, when either of the engaged pair breaks off without just cause from their mutual compact, that both should have the opportunity of testifying to that with which they are presumably best acquainted. In some quarters it was expected that this permission would in some degree happily diminish the frequency of such trials; but the number of love-lorn litigants does not yet seem to have been much reduced. Fair plaintiffs are found willing to come forward *in propria persona* to tell of blighted hopes; and they seldom retire without having ample *solutum* awarded to them by sympathetic juries. No doubt there will still be many sensitive maidens who, when jilted, will prefer to pine in secret over their disappointment. Occasionally, however, these delicate scruples on the part of deserted charmers will be overcome by the persuasions of their natural guardians, even to the extent of themselves appearing shyly in the witness-box when other evidence will not suffice to clear their aspersed names.

It is, nevertheless, to be regretted that those who are constrained to seek the stern remedy of the law should find their private grievance made a cause of diversion by the unpoetic outer world, or see a throng of fashionable loungers crowding the court to titter at the witty criticisms of learned counsel upon rose-scented *billet-doux*. In *Le Moniteur*, a Port-au-Prince paper now before us, promises of marriage between male and female citizens of the republic are duly recorded along with the regular lists of births, deaths, and solemnised marriages. Much nearer home than Hayti the same idea is carried out. In Cologne and other German towns, for example, parents publicly advertise the engagement of their sons or daughters—a plain hint that none need seek to captivate their hearts. Besides, after such an intimation, of course neither of the two concerned in it can venture to withdraw from his or her proclaimed allegiance with any

hope of receiving countenance in other attractive quarters.

It may, however, be hoped that, in the long-run, even without this system, the facilities given here for speedy settlements between estranged lovers will help to make young people less rash or less capricious. It would no doubt be unfortunate if so mean motive as the fear of having to pay substantial damages should be alone or mainly depended upon for insuring greater constancy to plighted troths. If this were so, there might be some grounds for dreading the yet more deplorable evil of an increase of divorce cases. But still even this mercenary feeling may sometimes help to teach foolish flirts of either sex that promises of wedlock are too sacred and serious a subject to be trifled with. Should a few more verdicts, with round sums attached to them, teach capricious wooers how dangerous it is to 'propose' in haste and repent at leisure, the result will certainly rejoice all good-hearted people, who regard the exposure of lovers' quarrels with sentiments more or less tinged with pain.

PREHISTORIC GIANTS.

In *Nature* for April 19th the Duke of Argyll, quoting from a communication received from the Governor-general of Canada, writes as follows :

I have been surprised to see in the English scientific journals no notice taken of the very remarkable discovery reported from the Californian Academy of Science in a paper communicated to that body by Charles Drayton Gibbs, C.E., on the discovery of a great number of (apparently) human footprints of a gigantic size in the State of Nevada. It appears that in building the State Prison, near Carson City, the capital of that State, there was occasion to cut into a rock composed of alternate layers of sandstone and clay.

On several of the clay floors exposed in this operation great numbers of tracks of all sorts of animals have been exposed. These tracks include footprints of the mammoth or of some animal like it, of some smaller quadrupeds apparently canine and feline, and of numerous birds. Associated with these are repeated tracks of footsteps, which all who have seen are agreed can be the footprints of no other animal than man, and the engravings and photographs which accompany the paper leave no doubt on the mind of any one who sees them. The most remarkable circumstance characterising them is their great size. In one case there are thirteen footprints measuring nineteen inches in length by eight inches wide at the ball, and six inches at the heel. In another case the footprints are twenty-one inches long by seven inches wide. There are others of a smaller size, possibly those of women. One track has fourteen footprints eighteen inches long. The distance between the footprints constituting a 'step' varies from three feet three inches to two feet three inches and two feet eight inches, whilst the distance between the consecutive prints of the same foot constituting a 'pace' varies from six feet six inches to four feet six inches. In none of the footprints of the deposit are the toes or claws of animals marked. As regards the beasts, this is probably due to the 'slushy' state of the

mud when the tracks were made. But in the case of the human footprints it is probably due to the use of some kind of shoe or moccasin.

I need not say that so far as the geological horizon is concerned this discovery does not carry the existence of man beyond the Quaternary Mammalia, with which it has long been pretty clear that he was associated in prehistoric times. Nevertheless it is, if confirmed, a highly remarkable discovery, especially as connected with the curious intimation so concisely made in the Jewish Scriptures, 'And there were giants in those days.' Hitherto, so far as I know, the remains of prehistoric man, so far as hitherto discovered, have not revealed anything abnormal in point of size. It is just possible that the slippery and yielding nature of the muddy lacustrine shore on which the tracks were made may have partly occasioned the apparent size. But the photographs and engravings exhibit them as very sharp and 'clean cut.' Professional Indian trackers have been employed to examine the tracks, and none of them seem to have the smallest doubt as to the footprints being human.

LOVE IS LOVE FOR EVERMORE.

Under the blue of a summer sky,
Under the spell of Beauty's thrall,
Watching the sun-clouds floating by,
Watching the wavelets rise and fall ;
Happy as lovers alone can be,
Dreaming what bliss the years will bring—
Dreaming beside the summer sea—
Hearing the dancing waters sing,
With rippling murmur along the shore—
'Love is love for evermore.'

Under the gray of a cloudy sky,
Under the shadow of Love's eclipse,
Standing apart with flashing eye,
Standing apart with quivering lips ;
Fighting a duel 'twixt love and pride,
Waging a war that is fraught with pain,
Turning Love's pleading lips aside—
Turning deaf ear to the wave's refrain,
Breaking in sadness along the shore—
'Love is love for evermore.'

Under the gloom of a gathering storm,
Under a midnight wild and dark,
Watches a shivering maiden's form,
Watches and waits for some one's barque ;
Helpless it rides without spar or mast,
Driven ashore, and tossed about,
Drifting to death, and the cruel blast
Drowning his cries with mocking shout.
Above the roar breaks a wail ashore—
'Love is love for evermore.'

Under the dawn of a smileless morn,
Under the sorrow that grieves for the dead,
Weeps a woman with heart forlorn—
Weeps, and will not be comforted ;
Suddenly, swiftly, with eager face
Steals one to her through wrack and rain—
Love has its triumph in a long embrace—
The dead hath risen to life again ;
And the waters murmur as before,
'Love is love for evermore.'

W. C. H.

Printed and Published by W. & R. CHAMBERS, 47 Paternoster Row, LONDON, and 339 High Street, EDINBURGH.